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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,644	11/05/2002	Ching-Yu Chang	JCLA9373	5976
23900	7590	07:27/2004	EXAMINER	
J C PATENTS, INC. 4 VENTURE, SUITE 250 IRVINE, CA 92618			SAGAR, KRIPA	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/065,644	Applicant(s) CHANG, CHING-YU	
	Examiner Kripa Sagar	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat.5665621 to Hong in view of US Pat.5958656 to Nakao.

The steps of claims 1,12 are described in figs.3a-f and fig.4 in Hong's disclosure. It teaches (2;33-45) forming buried bit lines (not shown); forming oxide layer (32) on top of the bit lines, forming word lines (34, perpendicular to the bit lines) on the oxide layer; forming a protective oxide layer (36, cap layer) on the word line. A photoresist (40) is patterned to open windows on the cap layer as shown in fig.3e. The cap layer is etched to code the ROM (fig.3f).

The protective layer is an oxide strip [cl.2,5] with an etch rate lower [cl.4] than that of the metal layer for the etchant used. The openings (20) are conventionally rectangular in shape as shown in fig.2 [cl.11].

Hong teaches lithographic method of patterning the windows on the ROM mask but does not teach the specific exposure methods.

Nakao teaches forming openings for memory cells using two exposures [cl.1,12] with [cl.3] a line-and-space mask (fig.1,2). The two exposures are orthogonal to each other, one of them being parallel to the word line (fig.4). The intensity is below the

threshold limit [cl.6,7] as shown in fig.4 and the net intensity at the intersecting region is above the threshold as shown in fig.5. In a negative resist the dark squares would be developed to form holes or contacts (9;33-42). Nakao teaches [cl.9] off-axis illumination is conventionally used with binary masks (fig.8). The photoresist [cl.10] may be an I-line or DUV resist (13;56-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Nakao's exposure techniques to form the coding windows in Hong's lithographic process because Nakao recommends it for forming dense array of windows for memory cells; and further teaches that the process is robust with a large depth-of-focus (14;8-18) thereby enabling accurate placement of the holes even with slight defocus. This is known to be important to the fabrication of the ROM mask (1;49-62).

3. Claims 1-7,10-16,19,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hong above in view of US Pat. 6238850 to Bula et al.

The teachings of Hong have been discussed above. Hong does not teach the specific exposure methods.

Bula teaches forming square openings [cl.11] using two partial exposures [cl.1,12] with a binary [cl.3] line-and-space mask (fig.2). The two partial exposure dosages [6,7] may be the same or different (4;19-25). Conventional resists [cl.10] and exposure steps are used that include I-line resists (2;7-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the double exposure technique of Bula to form rectangular or square coding windows of Hong's ROM process because Bula teaches that the method is error-tolerant, adaptable to conventional techniques and provides the desired shapes with no concern for diffraction effects. The method also forms images at or near the resolution limits of the lithographic system (5;39-6;21).

4. Claims 1, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat.5869373 to Wen in view of US Pat.6558881 to Tokushima.

Wen teaches the steps of forming a ROM mask in fig.2. The lithographic steps for coding are discussed (6;65-7;42).

Wen uses a single exposure to open the windows.

Tokushima teaches forming a lattice pattern using two exposures with line-and-space pattern masks (figs.1-8) to form square patterns.

It would have been obvious to one of ordinary skill at the time the invention was made to use a two-exposure technique to form the array of square openings taught by Tokushima in forming the coding windows of Wen because Tokushima teaches that it increases productivity (9;16-10;16).

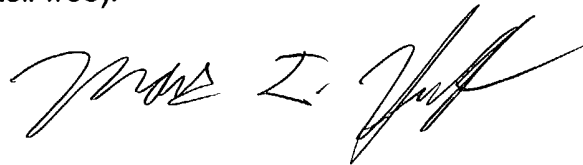
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kripa Sagar whose telephone number is 571-272-1392. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Mark F. Huff', with a stylized, cursive script.

MH/ks

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700